Original scientific article

UDK 355.097-058.8:159.944.4(497.4)
DOI: 10.51936/dr.40.105-106.69-94

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SOCIO-ECOLOGICAL MODELLING OF SUPPORT FACTORS TO MITIGATE THE RISKS OF PTSD IN SLOVENIAN MILITARY FAMILIES

ABSTRACT

Post-traumatic stress disorder (PTSD) occurs because of a variety of stressful situations and can be alleviated by a combination of support factors across different socio-ecological levels. The study investigates the impact of support at different socio-ecological levels on risk factors for PTSD in military families. A survey of 366 Slovenian service members and their spouses or intimate partners was conducted. We ran a basic regression model of risk factors for PTSD and later 6 two-stage hierarchical regression analyses to determine how the effect of risk factors on PTSD changes when support factors are added. On the micro level: 1) work environment support lessens the negative impact of general health and depression on PTSD; 2) spousal/intimate partner support is beneficial for women; and 3) family support offsets the negative impact of work on PTSD. On the meso and macro levels, community and military support ease the negative impact of the direct work environment, while macro national support significantly contributes to reducing PTSD.

KEY WORDS: risk factors model, socio-ecological modelling, support factors, post-traumatic stress disorder (PTSD)

Socio-ekološko modeliranje dejavnikov zaščite za zmanjševanje tveganja za PTSM v slovenskih vojaških družinah

IZVLEČEK

Posttravmatska stresna motnja (PTSM) se lahko razvije kot posledica različnih stresnih dogodkov, pri čemer pa na njen potek lahko vpliva opora, ki jo posameznik/-ica prejme iz okolja. Naša študija analizira vpliv opore iz različnih socio-ekoloških ravni na dejavnike tveganja za PTSM v vojaških družinah. Anketirali smo 366 pripadnikov/-ic in njihovih partnerjev/-ic. V prvi fazi smo testirali osnovni regresijski model dejavnikov tveganja za PTSM. Nadalje smo izvedli šest dvostopenjskih hierarhičnih regresijskih analiz, da bi ugotovili, kako se učinek dejavnikov tveganja na PTSM v osnovnem regresijskem modelu spremeni z dodajanjem dejavnikov opore. Na mikro ravni: 1) opora s strani delovnega okolja zmanjšuje vpliv splošnih zdravstvenih težav in depresije na PTSM; 2) opora partnerja/-ice koristi ženskam; 3) opora družine nevtralizira vpliv dela na PTSM. Na mezo in makro ravni opora skupnosti in ustrezna vojaška institucionalna opora zmanjšujeta vpliv mikro delovnega okolja, medtem ko makro nacionalna opora v različnih oblikah prispeva k zmanjšanju PTSM.

KLJUČNE BESEDE: model dejavnikov tveganja, socio-ekološko modeliranje, dejavniki zaščite, posttravmatska stresna motnja (PTSM)

1 Introduction

Military organisations are an integral part of most societies. The uniqueness of the military profession ultimately lies in the sacrifice that can be required of service members, namely to give their lives for the continued existence of a country. Despite this uniqueness, service members generally face many of the same challenges as other professions when it comes to balancing family, work and personal time, with a few distinct military-specific challenges. In that vein, Coser (1974) and later more specifically Segal (1986) define both the military and the family as greedy institutions that demand loyalty and devotion from their members. Furthermore, the military makes demands on the time and energy of the whole family (Vuga Beršnak and Juvan 2013). Such demands often result in various negative health outcomes for service members whose issues can have a spill-over effect on the family (e.g. Foran et al. 2017; Rentz et al. 2007; Skomorovsky et al. 2015). We define a military family as comprising a member of the

armed forces, his or her spouse or intimate partner and at least one minor child. As such, military families possess a unique ecosystem of intricately linked social networks that constitute a foundation of their interactions with the environment. As various risk factors have an adverse negative impact on mental health, support can have positive consequences for the mental health of military families. In observing the mental health of military families, we have narrowed our focus to post-traumatic stress disorder (PTSD) (e.g. Campbell and Renshaw 2016; Foa et al. 2009; Hoge et al. 2004). PTSD is a mental disorder commonly affecting military personnel, often arising after experiencing or witnessing traumatic events threatening life or health. In the case of Slovenian Armed Forces (SAF), such events may occur during deployments in various international operations and missions (e.g., Lebanon, Afghanistan, Iraq, Chad, Mali, Kosovo etc.). Symptoms, including anger outbursts, panic attacks, fear, depression, hallucinations and flashbacks, can manifest with a delay. While historically associated with war veterans, PTSD also affects non-veterans who have experienced natural disasters, terrorist attacks, sexual assaults or severe injuries. Research by Foran et al. (2017) highlights that PTSD in parents, especially fathers, can negatively impact their children's mental health, particularly during the period of reintegration into family life, with long absences and problematic behaviour posing significant risks to children's well-being (Vuga Beršnak et al. 2022).

We have developed our zero model (see more in Vuga Beršnak 2020; Vuga Beršnak and Lobe 2022) and tested it on both civilian and military samples. The model is based on Bronfenbrenner's (1979) ecological systems theory, where the individual level refers to the individual characteristics of service members and their spouses, the micro level comprises the military family level, the military organisational level and the extended family, the meso level comprises the interactions among these micro level units and the macro level comprises the national and institutional policy framework as well as the position of the military organisation in a society. In further research, we have narrowed our focus to mental health, in particular PTSD. Our aim was to observe the expected changes in PTSD within the risk factor model when supportive factors are also taken into account. This article therefore presents our findings on the risk and support factors that either contribute to or reduce PTSD. We have focused on six models of support factors derived from the micro, meso and macro levels, as will be elaborated later.

The findings hold significance not only for future targeted research, but also for the military to prepare preventive measures and learn how to respond to cases of PTSD in their service members.

2 Theoretical background: support factors for military family mental health

As previously mentioned, the construction of these six models is supported by Bronfenbrenner's (1979) socio-ecological theory and previous findings, as explained further on. Within the microsystem, support stemming from the ***work environment*** emerges as an important predictor of positive mental health outcomes for service members. High levels of social support from fellow colleagues and direct supervisors have been found to have a protective effect on employees' mental health in various types of studies, e.g. cross-sectional (Bromet et al. 1992) and longitudinal (Kawakami et al. 1992) investigations. Additionally, decision latitude[1] is another factor positively affecting mental health outcomes (e.g. Hesketh and Shouksmith 1986; Theorell et al. 2015; Warr 1990). Flexibility of commanders, along with flexible work schedules, reduces work stress (Traven et al. 2005). A study of police officers also highlighted the importance of a supportive and accommodating work environment, noting that "a compassionate work environment becomes a protective factor that arguably shields police officers from developing PTSD" (Maguen et al. 2009: 758).

Moreover, studies of US peacekeepers and veterans show that if the work environment is understood as a proxy for morale and unit cohesion, these variables serve as additional protective factors against PTSD (e.g. Bartone et al. 1998; Brailey et al. 2007; Goldmann et al. 2012; Maguen et al. 2004; Maguen and Litz 2006).

Family support is another protective factor within the microsystem. As noted above, the relations between the military and the family are complex and family support – noting that its needs must often come second to the demands of the military – is vital for protecting service members from mental health issues (e.g. Cai et al. 2017; Han et al. 2014; Luciano and McDevitt-Murphy 2017). From an inherently supportive and caring institution like a family, such support is expected (Švab 2001). In general, family support increases the motivation and well-being of deployed service members (Kamphuis et al. 2012). Additionally, when in distress, service members can rely on a supportive family to provide them with a sense of purpose and comfort (ibid.). Furthermore, family support mitigates threat exposure, mainly for service members with low degrees of self-efficacy (Delahaij et al. 2016). Relating to deployment, a study investigating the protective role of family support conducted among Norwegian service members during

1. Karasek (1979: 289–290) defined decision latitude as "the working individual's potential control over his tasks and his conduct during the working day".

and after a naval deployment showed that family support not only improved their mental health post deployment, but also acted as a long-term protective factor throughout the deployment period (Nordmo et al. 2019). Moreover, Schnurr et al. (2004) and Polusny et al. (2011) illustrated that post-deployment PTSD is associated with lower levels of social support, including family support. Conversely, high levels of support indicate protection against PTSD (Goldmann et al. 2012). Finally, one study grounded in Bronfenbrenner's theory shows that although lower levels of family support are associated with higher depression and PTSD, the results were not significant when controlling for other variables (Vest et al. 2017). The authors concluded that family support is likely to affect mental health outcomes, but the effect may be obscured by other factors (ibid.).

Spousal (intimate partner) support is a similar and related protective factor but studied separately for the purpose of this article. Similar to family support, it is considered a type of social support, with spouses and intimate partners usually serving as the primary source of support (Balderrama-Durbin et al. 2013).[2] In the literature, spousal support generally refers to support within married couples and intimate partnership. In our study, we mainly use the term spousal support, as it is more widely recognized. Numerous studies have explored supportive behaviour exhibited by intimate partners, e.g. relating to individuals' attachment styles (Collins and Feeney 2004; Holmstorm 2015), couple's history (Carlson 2014; Goldsmith et al. 2012), individuals' satisfaction with their relationship (Guntzviller et al. 2017; Verhofstadt et al. 2013). Service members suffering from PTSD usually do not disclose their trauma to medical professionals initially, meaning that the role of the spouse may be a crucial protective factor (ibid.). Regarding deployment, studies show that support provided by the spouse or intimate partner should not be underestimated during the post-deployment transition (e.g. Bommarito et al. 2017; Knobloch et al. 2018). Moreover, supportive couples have an easier time navigating the transition period (Karakurt et al. 2013) and spouses or intimate partners can also potentially help service members seek mental health care (Meis et al. 2010).

On the meso level, we have identified ***community support*** as a protective factor. Higher levels of social and community support have been associated with fewer symptoms of mental health problems, such as PTSD (Barrett and Mizes, 1988). Community support includes, for instance, extracurricular activities for children, social action programmes, community capacity building, and other beneficial community practices (e.g. Bowen et al. 2000; Huebner et al. 2009;

2. However, intimate partners and spouses can also be a risk factor for stress, mainly for combat veterans (Laffaye et al. 2008).

Martin et al. 2004). As previously noted, social support networks, including community networks, are one of the strongest protective factors against PTSD (e.g. Balderrama-Durbin et al. 2013). A study involving Vietnam veterans showed that those with better social networks reported better mental health outcomes (Keane et al. 1985). Consequently, the relationship between social support and PTSD is well established (e.g. Polusny et al. 2011; Schnurr et al. 2004). In terms of Slovenian specificities, there is evidence of robust support from the extended family, while parents express a preference for additional options for organised forms of temporary care for shorter periods (Kuhar 2011).

While social support from friends, family and the community is important, the role of institutional support is also key for the mental health of service members. At the macro level, ***institutional support from both the military and the state*** can be an important support factor (e.g. Barnes et al. 2013). In the US, formal military support networks include Ombudsman Groups and Family and Community Support Centres, which provide support to service members and their families (Huebner et al. 2009). Additionally, US Airforce service members, for instance, receive support from The Airman and Family Readiness Center (ibid.). In Slovenia, macro-level support factors stem from a public and universal system of schools and kindergartens, regulated by law (Humer 2018). Moreover, for service members and their families, there is institutional military support at the legislative level, called Comprehensive care for service members, although it is not fully enforced.

Further explanations regarding the impact of support factors on various socio-ecological levels for PTSD in Slovenia will be provided in the empirical part of the study, where we will integrate support factor models into our already developed model of risk factors, thus advancing our understanding of military-specific risk and support factors for military families.

3 Research question and hypotheses

Research question: At which socio-ecological level do the effects of support factors reduce the risk factors most significantly, thereby providing the greatest benefit to the mental health of military families?

- Hypothesis 1: *Support stemming from micro work environment reduces the impact of risk factors on PTSD.*
  Modern organisations heavily rely on positive mental health at work (Davenport et al. 2016). Improving the work environment is made possible by promoting good mental health, which has a favourable effect on employees and their job performance (Meyers et al. 2013). In addition, we assume that

support stemming from the work environment also improves (military) family mental health. The so-called "buddy system" is particularly important for service members. Regarding the SAF, Jelušič (2003) emphasises the military organization's commitment to specific goals, tasks and methods, that is socialisation within the profession, which leads to homogeneity of organisational values or a common organisational mindset.

- Hypothesis 2: *Support stemming from the micro family level reduces the impact of risk factors on PTSD.*
  The family remains the main source of production of welfare systems (Esping-Andersen 1990). Social support from the extended family is generally important in Slovenian families, including help with household chores and childcare provided by grandparents (Kuhar 2011; Žakelj and Švab 2009). Compared to other EU countries, Slovenian families rely more extensively on the help of grandparents. Due to the proximity of households and the country's geographical characteristics (i.e. the size and population density), the majority of service members commute daily (Vuga Beršnak et al. 2022). Hence, their primary support comes from the extended family and informal social network (friends), rather than from the military community (Vuga Beršnak et al. 2021).
- Hypothesis 3: *Spousal (intimate partner's) support reduces the impact of risk factors on PTSD.*
  Spousal or intimate partner's support is one of the more important generators of family support. Research (e.g. Moelker and Van der Kloet 2003) has shown that female military spouses are more adept at managing challenging situations and stress than female civilian spouses. However, the challenges of military service, such as frequent moves and multiple family separations due to training and deployments, create some unique difficulties for spouses intimate partners of service members. Families that are competent at managing stress exhibit a greater degree of internal connectedness and cohesion, alongside enhanced ability to express emotions (Moelker 2005). It should be noted that numerous studies have found a significant link between service members' PTSD and spousal well-being (e.g. Caska and Renshaw 2013; Renshaw and Campbell 2011; Renshaw et al. 2011).
- Hypothesis 4: *Community support on the meso socioecological level reduces the impact of risk factors on PTSD.*
  Community support is a protective factor related to the meso socio-ecological level. It comprises both formal and informal networks. As previously mentioned, informal networks are preferred in the context of military families (Orthner and Rose 2007). This is specifically important for military families in

Slovenia, who live in a civilian environment and are not bound by rules nor receive direct support of a military base.

- Hypothesis 5: *Institutional support of Slovenian Armed Forces on a macro level decreases the impact of risk factors on PTSD.*
  One of the macro-level factors involves support measures implemented by the SAF. These are laid down in the Military Service Act and in implementing regulations concerning comprehensive care of SAF service members (Vuga Beršnak 2020). However, due to the important role of the country and its social policies, the military offers support to service members mainly as a supplement to the national system (e.g. national public health system, public education system). Additional SAF support includes low-cost rental of military housing for service members and provision of military lodging for vacations at the seaside or in the mountains. The Military Service Act also includes provisions for financial support for family members of service personnel occupying peacetime posts abroad (e.g. a financial contribution for an unemployed spouse and children).
- Hypothesis 6: *Through its national family policies and labour legislation, the country reduces the impact of risk factors for PTSD.*[3]
  While hypotheses 2 and 3 are based on the findings that the family and the spouse remain the main sources of welfare production, hypothesis 6 aims to find out whether de-familiarisation[4] (Esping-Andersen 1990), which increases the importance of the state and its policies and measures towards the family, is present in Slovenia. Thereby, the state assumes an important support function, reduces parental burden and thus has a positive impact on mental well-being of families, including military families. The provision of social services by the state is a characteristic of social democratic welfare countries such as the Republic of Slovenia. These services includes aiding families with children through financial benefits and tax rebates, as well as a public preschool system (Esping-Andersen 1999).

3. The impact of national family policies and labour legislation was assessed based on the participants' perceptions.
4. Familiarisation is based on a system that places childcare within the framework of the family, particularly women as key care providers, while de-familiarisation refers to the transfer of certain care practices from the family to either public services or the market where services are available for a fee. De-familiarisation is characterized by public services, the cost of which is accounted for in the gross domestic product. De-familiarisation indicates the level up to which family and social care policies enable the commodification of family or household maintenance via public services provided by the state or via services on the market (Esping-Andersen 1999: 51).

4 Methods

4.1 Sampling and data collection

We carried out the survey during the pandemic lockdown restrictions, which rendered face-to-face survey data collection at the barracks impossible. Instead, questionnaires were distributed and completed electronically via the 1KA survey service (1KA).

Accordingly, we opted for non-probability quota sampling, defining the quotas based on our research focus: 1) the gender structure in the observed population; 2) the number of children (i.e. we included only service members and spouses with children and, in the second step, considered the family size) in the observed population. The link to the survey was disseminated through both formal military channels and informal personal networks. The sampling strategy was devised to proportionally reflect the key characteristics of the military population relevant to our research purpose – gender, number of children and deployment. We aimed to include as many service members exposed to the highest military demands (i.e., mainly combat units) as possible. Therefore, the majority of respondents were service members operating at the tactical level. For spouses, we applied non-probability purposive sampling. Each service member who participated in the survey was asked to invite their spouse.

4.2 Statistical analysis

Table 1: Risk and support factors.

	RISK FACTORS MODEL	SUPPORT FACTORS
INDIVIDUAL RISK FACTORS	Age of a child (preschool, primary school, teenagers)	
	Gender	
	Health	
	Depression	
MICRO RISK FACTORS	Parental stress	Spousal (intimate partner's) support
	Family stress	Family support
	Workplace stress	Work environment support
	Poor financial situation	
MESO RISK FACTORS	Non-military spouse's unemployment	Community support
	Conflict about domestic obligations	
MACRO RISK FACTORS	Long-distance daily commuting	National family, labour and relevant policies
	Deployment	

We calculated 7 regression models by using the SPSS statistical tool. The index (Cronbach α=0.961 for mental PTSD outcomes was calculated based on the originally measured scales (Weathers 1994; Weathers 2013).

We have based our analysis on the model of statistically significant military-specific risk factors for health and well-being of military families (see Table 1). In the theoretical section of the article, we presented the positive impact of support factors at each level within the family ecosystem. We observed changes in the previously established risk factor model (model zero) when accounting for aforementioned support factors, separately on each socio-ecological level: specifically, the micro family level, micro spousal (intimate partner's) level, micro work level, meso community level, macro military level and macro state level.

To assess the importance and strength of the support military family receives from sources on each socio-ecological level, we needed to observe the differences in the risk factor model when adding support factors originating from each level separately (see Table 2). The aim was to evaluate how PTSD risks are influenced by support factors originating from the following sources (see Table 2): 1) micro work environment; 2) micro family environment; 3) micro spousal (intimate partner's) support; 4) meso community support; 5) macro institutional support; 6) macro national policies.

To measure the impact of support factors originating from each socio-ecological level, we calculated 7 linear regression models. Firstly, we performed a basic (risk factor) regression model for PTSD (model zero). In the next step, six two-level hierarchical regression analyses were executed. These analyses aimed to assess how the effect of risk factors on PTSD in the basic regression model (first level) changed as support factors on each level were added (second level). We did not include all support factors simultaneously in the model. Instead, we examined each protective group separately to observe how it influenced the effect of risk factors on PTSD.

Table 2: Scales for measuring the support factors on various socio-ecological levels.

VARIABLES	MODEL	SOCIO-ECOLOGICAL LEVEL
Support and taking over some work responsibilities by co-workers in the unit.	Work environment support on the micro level (5 – point Likert Scale)	MICRO
Support of superiors in enabling the flexibility of work in the military.		
General family dynamics (Epstein, N. B., Baldwin, L. M., and Bishop, D. S. (1983): FAD).	Family support on the micro level (5 – point Likert Scale)	MICRO
Spouse's satisfaction with service member's working conditions (working hours, flexibility, etc.)		
Index of support of the closer family network: • Support of partner with daily chores and childcare. • Support of grandparents with daily chores and childcare.		
Index of support of the wider social network: • Support of other relatives and friends with daily chores and childcare. • Hired help (babysitter, cleaner, etc.) with daily chores, childcare and/or helping parents.		
Spousal (intimate partner's) support and satisfaction: • Spouse's satisfaction with service member's working conditions (working hours, flexibility, etc.) • Spouse's support in doing most of the daily tasks (e.g. shopping, cleaning, helping the children with homework, playing with the children, taking care of the children's transport to kindergarten, school, etc.).	Spousal (intimate partner's) support (5 – point Likert Scale)	MICRO
Index of community support: • Support of extracurricular activities that offer children and youth the opportunity to spend their free time in an active and healthy way, even if parents are unable to attend due to work commitments.	Community support on the meso level (5 – point Likert Scale)	MESO
Index of Slovenian Armed Forces (SAF) institutional support: • Support in the form of official housing, holiday accommodation, etc. • Support in the form of occasional or regular care and animation for children and youth (e.g. holiday workshops, occasional care during deployments). • Support in the form of a kindergarten in a barracks. • Support in the form of workshops and training courses on how to deal with personal and service challenges.	SAF support (5 – point Likert Scale)	MACRO

Index of welfare state support: • Support of an accessible public education system that allows parents to be fully employed. • Support effect of parental rights (the right to continued payment of wages in the event of a child's illness, to take leave when a child is born, the right to reduced working hours until the child's certain age, etc.).	State support by way of national policies and measures (5 – point Likert Scale)	MACRO
Index of quality of life in the country (satisfaction with following): • Affordable housing. • Affordable public childcare. • Affordable private childcare. • Availability of work apartments. • Availability of health system. • Availability of public childcare. • Availability of public transportation. • Availability of activities for children and youth.		

4.3 Ethical considerations

In our study, we adhered to rigorous ethical guidelines to ensure the integrity of our research. Prior to commencing the study, which was a part of a larger project,[5] we obtained approval from The Ethics Committee (approval number: 801-2020-018/JG) to confirm that our research complied with the highest ethical standards. All participants were provided with detailed information about the study, including the voluntary nature of participation, potential risks and their right to withdraw at any time without any consequences. To safeguard the participants' privacy and maintain data confidentiality, we implemented measures to anonymize responses and securely store data, ensuring that individual participants could not be identified in any reports or publications.

Recognizing the sensitive nature of mental health topics, protocols were established and followed. We were particularly cautious to minimize any potential distress caused by the survey, providing participants with an option to access psychological support if needed.

5. The present study is a segment of a larger basic research project funded by the Slovenian research and innovation agency (ARIS). The research project Military-specific risk factors for the well-being and health of military families (MilFam) was the first comprehensive study of military families in Slovenia and focused on their mental health outcomes on different socio-ecological levels.

5 Results

We analysed a sample of 288 service members and 78 spouses, totalling 366 respondents (see Table 3).

Table 3: Sample characteristics.

CHARACTERISTICS	SERVICE MEMBERS		SPOUSES	
	Percentage	Frequency	Percentage	Frequency
Gender				
Male	84%	210	18%	11
Female	13%	33	82%	51
Prefer not to say	3%	6	0%	0
Total	100%	249	100%	62
Age group				
Up to 35	26%	57	27%	15
36 to 45	45%	98	58%	32
46 to 55	23%	51	15%	8
56 and older	6%	13	0%	0
Total	100%	219	100%	55
Number of children				
1	35%	101	49%	38
2	48%	138	43%	34
3 or more	17%	49	8%	6
Total	100%	288	100%	78
Deployment*				
Yes	92%	211	93%	53
No	8%	19	7%	4
Total	100%	230	100%	57

** Spouses answer for the service members.*

The table presents key demographic and familial attributes of military service members and their spouses, highlighting differences in gender distribution. A majority of service members are male, while a majority of spouses are female, which roughly corresponds to gender distribution within the SAF. The age groups of the sample predominantly fall within the range of 36 to 45 years, and the data show that the majority of respondents were deployed, as reported by service members themselves and their spouses. Having children was one of the conditions for inclusion in the study. Interestingly, families with 3 children are slightly overrepresented in the

military family sample compared to general Slovenian statistics. Now, we proceed to discuss the results of our regression models.

Model 0: basic risk factor model for PTSD[6]

The basic risk factor model (see Table 1) accounts for 46.3% of the variance in PTSD (adjusted R square: 0.431). Statistically significant β coefficients are observed for the following risk factors:

- Poorer health is associated with higher PTSD values (stand. β: -0.229, p=0.000).
- Higher levels of depression are associated with higher PTSD values (stand. β: 0.362, p=0.000).
- Increased stress at work is associated with higher PTSD values (stand. β: 0.112, p=0.043).
- Financial issues are associated with higher PTSD values (stand. β: 0.137, p=0.008).

The comparison of standardized beta coefficients shows that depression is by far the most substantial risk factor for PTSD, followed by health self-assessment. The specific nature of military service and financial concerns contribute to PTSD to a lesser degree.

Table 4: Regression model - impact of support factors on military family's risks for PTSD.

PTSD	Model 0		Mode 1a: Work environment support on the micro level		Model 1b: Family support on the micro level		Model 1c: Spousal (intimate partner's) support		Model 1d: Community support on the meso level		Model 1e: SAF support		Model 1f: State support by way of national policies and measures	
R Square	0.46		0.44		0.44		0.46		0.47		0.49		0.48	
Adjusted R Square	0.43		0.39		0.38		0.42		0.44		0.45		0.45	
	Stand. Beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p
(Constant)	1.85	0.16	1.911	0.13	2.547	0.54	2.402	0.33	2.167	0.08	2.509	0.04	2.169	0.27
0 to less than 6 years	-.005	.934	.004	.953	-.014	.829	-.015	.793	-.035	.528	-.025	.647	.024	.668
6 to 14 years	.000	.993	-.030	.651	-.028	.660	-.004	.945	.006	.913	-.004	.939	.023	.671
15 to 18 years	-.008	.876	-.047	.465	-.032	.609	-.007	.903	-.011	.839	-.033	.541	.009	.870

6. For detailed explanation of the risk factors' variables see article Vuga Beršnak and Lobe 2022.

PTSD	Model 0		Mode 1a: Work environment support on the micro level		Model 1b: Family support on the micro level		Model 1c: Spousal (intimate partner's) support		Model 1d: Community support on the meso level		Model 1e: SAF support		Model 1f: State support by way of national policies and measures	
	Stand. Beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p
Gender: Male	-.095	.058	-.035	.573	-.059	**.309**	**-104**	**.044**	-.070	.173	**-.125**	**.015**	-.094	.066
Self-evaluation of general health	**-.229**	**.000**	**-.264**	**.000**	**-.203**	**.002**	**-.206**	**.000**	**-.222**	**.000**	**-.249**	**.000**	**-.221**	**.000**
Depression	**.362**	**.000**	**.301**	**.000**	**.311**	**.000**	**.344**	**.000**	**.338**	**.000**	**.366**	**.000**	**.373**	**.000**
Parental stress	.072	.201	.108	.105	-.005	.939	.065	.269	.066	.247	.028	.622	.068	.220
Family stress	.093	.115	.052	.489	**.165**	**.019**	**.122**	**.045**	.140	.021	**.130**	**.034**	.097	.098
Workplace stress	.112	.043	.089	.198	.024	.712	.078	.182	.094	.095	.079	.158	.115	.036
Poor financial situation	**.137**	**.008**	**.148**	**.020**	.137	.023	**.115**	**.030**	**.133**	**.012**	**.137**	**.008**	**.150**	**.004**
Non-military spouse's unemployment	-.020	.699	-.066	.296	-.042	.472	-.004	.944	-.024	.637	.001	.986	-.035	.494
Conflict about domestic obligations	-.059	.231	-.056	.352	-.081	.155	-.064	.207	-.081	.110	-.051	.301	-.046	.357
Long-distance daily commuting	.078	.110	.097	.109	.024	.660	.068	.169	.091	.071	.095	.054	.077	.111
Absence lasting longer than one month	.007	.893	-.002	.977	-.001	.988	.012	.824	**-.015**	**.770**	.014	.780	.006	.901
Index of support in the work environment.			.127	.263										
Flexibility of work in the military			-0.13	0.24										
General family dynamics					.065	.327								
Spousal (intimate partner's) support (of work in the military)					**-.140**	**.031**								

PTSD	Model 0		Mode 1a: Work environment support on the micro level		Model 1b: Family support on the micro level		Model 1c: Spousal (intimate partner's) support		Model 1d: Community support on the meso level		Model 1e: SAF support		Model 1f: State support by way of national policies and measures	
	Stand. Beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p	Stand. beta	p
Index of support of the closer family network					-.007	.905								
Index of support of the wider social network					.034	.578								
Spousal (intimate partner's) support of work in the military							**-0.128**	**0.024**						
Spousal (intimate partner's) support in taking on a greater share of daily obligations							-0.002	0.975						
Index of community support									-0.08	0.10				
Index of SAF institutional support											**-0.13**	**0.01**		
Index of parental rights and public schools and preschools													**-0.13**	**0.01**
Index of quality of life in the country													0.04	0.41

**Statistically significant at level 0.05*

By conducting regression analyses, we investigated whether the support factors reduce the afore-mentioned impact of risks.

Model 1a: Support factors stemming from the micro work level (Table 2)

The basic regression risk factor model was amended to include supporting variables at the micro level of the work environment: the index of support in the work environment and flexibility of work in the military. Model 1 explains 43.9% of the variability.

The negative impact of the specific nature of military work becomes statistically insignificant (stand. = 0.089, p=0.198), meaning that with the support of the co-workers and superiors, along with more flexibility, the nature of military work is no longer a significant factor when explaining PTSD. In addition, the value of standardized β coefficients for health self-assessment and depression decreased in comparison to the basic model, indicating that support provided by the work environment mitigates the negative impact of general health problems and depression on PTSD.

Model 1b: Support factors stemming from the micro family level (Table 2)

The basic risk factor model (Table 2) was expanded to include supporting variables at the micro family level (general family dynamics, spousal (intimate partner's) support, index of support from the closer family network, index of support from the wider social network). The basic model explains 43.7% of the variability (adjusted R square: 0.385).

In comparison to the basic risk-factors regression model, the impact of the factors changes to a certain degree. Notably, the nature of military work as a source of stress is no longer statistically significant, meaning that family support at the micro level neutralises its negative impact. On the other hand, the roles of family and family members are emphasized: poor family relationships have a negative impact on PTSD, while support provided by the spouse decreases PTSD. In the model, depression continues to be the most important PTSD factor, but the value of the β coefficient is slightly lower, which means a less prominent role of this factor in explaining PTSD. The same can be said for the role of an individual's health.

Model 1c: Support factors stemming from support provided by the spouse or intimate partner (Table 2)

The basic model explains 45.7% of the variability.

By including spousal (intimate partner's) support into the basic risk-factors regression model, the significance of gender in explaining PTSD becomes apparent, which can be interpreted as follows: when spousal support is not taken into account, both partners tend to react similarly to PTSD when exposed to

stressors. However, when support provided by the spouse or intimate partner is considered, women cope better with PTSD if they receive support.

Model 1d: Support factors stemming from meso community support (Table 2)

The basic model accounts for 47.2% of the variability.

By including the meso level support variable in the basic risk-factors regression model, family stress becomes statistically significant and workplace stress becomes statistically insignificant; when taking into account community support, the negative impact of workplace stress on PTSD is neutralised. Community support also somewhat mitigates the negative impact of depression on PTSD. Community thus plays a supportive role in aiding the work environment in mitigating its negative impact on PTSD.

Model 1e: Support factors stemming from macro institutional support – the military (Table 2)

The basic model explains 48.7% of the variability.

By including the institutional support function of the military, the role of gender in the regression model became significant in explaining PTSD.

Institutional support decreases PTSD; in addition, the negative impact of the specific nature of military work as a source of stress is neutralised. This suggests that effective military institutional support improves work conditions to the degree that they no longer have an impact on PTSD.

Model 1f: Support factors stemming from macro national policies (Table 2)

The model explains 48.1% of the variability.

By including the supporting factor of national policies and measures on the macro level in the basic risk-factors regression model, the statistically significant impact factors for explaining PTSD remained the same as in the basic model. Their importance also remained at an approximately equal level, indicating that this support factor does not decrease their impact but rather in itself substantially contributes towards decreasing PTSD.

6 Discussion

The analysis shows that it is sensible to examine the impacts on different socioecological levels, as the effects of the factors vary according to broader context and circumstance. It therefore cannot be claimed that there is a specific and singular type of support that contributes to decreasing PTSD.

Hypothesis 1 is partially confirmed, as support provided by the work environment diminishes the negative impact of certain risk factors. With support from

the work environment, the impact of health issues on PTSD is reduced and the impact of the specific nature of work in the military on PTSD is neutralized. With support from the work environment, the impact of parental stress is diminished. Hence, as found by many other authors (e.g. Bartone et al. 1998; Brailey et al. 2007; Goldmann et al. 2012; Maguen et al. 2004; Maguen and Litz 2006) the micro work environment serves as protective factor when considering PTSD.

Hypotheses 2 and 3 are confirmed by the findings. Consistent with several studies, both overall spousal (intimate partner's) (e.g. Karakurt et al. 2013; Bommarito et al. 2017; Knobloch et al. 2018) and family support (e.g. Cai et al. 2017; Han et al. 2014; Luciano and McDevitt-Murphy 2017) are very important for individuals' mental health and their ability to cope with PTSD. On a micro level, the results show the importance of spousal (intimate partner's) support as well as the impact of gender when facing PTSD, with women demonstrating better coping abilities when supported by their spouse or intimate partner. The role of the family is further exemplified by the fact that poor relations within the family have a negative impact on PTSD, while spousal (intimate partner's) support decreases the risks for PTSD. The micro level support therefore modifies the basic model of risk factors for military families, whereby family and spousal (intimate partner's) support indirectly reduce the impact of recognized negative risk factors for PTSD.

We find that on a micro level, both family and work environment support are important support factors. When military families receive both types of support, the negative impact of workplace stress on PTSD is neutralised.

Hypothesis 4 is confirmed as community support neutralises the impact of workplace stress on PTSD. The data are concurrent with general findings about the well-established relationship between social support and PTSD (e.g. Polusny et al. 2011; Schnurr et al. 2004).

Hypothesis 5 is also confirmed, as institutional SAF support improves work conditions to the degree that these no longer contribute to PTSD. The findings show that compared to men, women in military families find it easier to cope with PTSD if they are provided with SAF support. With its institutional support, the military has a positive impact on women coping with PTSD.

Hypothesis 6 is confirmed as national support on a macro level has a positive effect on reducing PTSD. The analysis shows that macro national policies have an important positive impact on reducing PTSD. This includes both family and labour policies and a positive living environment (well-being), manifested as accessible housing, education, healthcare and other circumstances.

7 Conclusion

Indeed, the existing literature provides valuable insights into the risk and protective factors for the health and well-being of military families all over the world. By conducting this study, we have contributed to this body of knowledge. We focussed on PTSD as one of the most prevalent mental health problems in different armed forces and strived to identify the support measures that help to mitigate the risks. The study specifically targeted the predominant family type in the SAF, and we focussed on service members of the tactical and combat level deployed at least once in their careers, as they are the most vulnerable. Naturally, a probability sample would have provided a more accurate reflection of the situation in Slovenian military families than a quota sample, but as always, researchers must take into account the objective limitations.

Due to Slovenia's national interests, its standing in the international community, the size of the country, its demography, etc., the SAF is in a favourable position compared to some other armed forces. The purpose and activities of the SAF, which are mostly non-combat oriented, serve as protective factors for the mental health of service members and indirectly for their families (spill-over effect). Furthermore, due to its all-volunteer manning and professional structure, SAF members are physically, psychologically and emotionally well-prepared to work in stressful or even critical crisis situations. Therefore, the likelihood of developing PTSD is likely to be lower than if the similar tasks were carried out by conscripts.

The research has shown that combat-related PTSD is not a prevalent problem among Slovenian service members. Nevertheless, PTSD is not completely absent in Slovenian military families, and as our empirical study has shown, both risks and supportive factors can be identified. The findings suggest that the impact of socio-ecological support on mental health risk factors among military personnel and military families should be further explored, as this may provide new insights into the function and importance of family, community, country and the military itself. Moreover, such research can serve as a valuable tool for the military in addressing potential future situations where PTSD becomes a bigger problem as a result of possible future activities of the Slovenian Armed Forces.

Data availability statement

Due to the nature of the research and at the request of the participating organization (SAF) supporting data are not available for security reasons.

Acknowledgment

We would like to express our gratitude to all the service members and the families who shared their intimate experiences. We would also like to thank the *Military-specific risk factors for well-being and health of military families* research group and Slovenian Armed Forces for their support.

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